Salmon-Challis Vegetation Keys

01/30/2011 – S-C NF

NOTE: These keys apply only to existing vegetation, not potential or historical vegetation.

R4 Key to Vegetation Formations

3/28/2008

This key does not apply to lands used for agriculture or urban/residential development. It applies only to natural and semi-natural vegetation dominated by vascular plants. Semi-natural vegetation includes planted vegetation that is not actively managed or cultivated.

All cover values in this key to formations are absolute cover, not relative cover, for the life form. See Appendix A for a discussion of absolute versus relative cover. In this key tree cover includes both regeneration and overstory sized trees, so that young stands of trees are classified as forest.

1a		All vascular plants total < 1% canopy cover……..	**Non-Vegetated (p.13)**
1b		All vascular plants total ≥ 1% canopy cover……..	2
	2a	All vascular plants total < 10% canopy cover…….	**Sparse Vegetation**
	2b	All vascular plants total ≥ 10% canopy cover…….	3
3a		Trees total ≥ 10% canopy cover……..	4
3b		Trees total < 10% canopy cover……..	5
	4a	Stand located above continuous forest line and trees stunted (< 5m tall) by harsh alpine growing conditions……..	**Shrubland Key (p.4)**
	4b	Stand not above continuous forest line; trees not stunted……..	**Forest Key (p.2)**
5a		Shrubs total ≥ 10% canopy cover……	**Shrubland Key (p.4)**
5b		Shrubs total < 10% canopy cover……	6
	6a	Herbaceous vascular plants total ≥ 10% canopy cover……	7
	6b	Herbaceous vascular plants total < 10% canopy cover……	8
7a		Total cover of graminoids ≥ total cover of forbs……	**Grassland Key (p.7)**
7b		Total cover of graminoids < total cover of forbs……	**Forbland Key (p.10)**
	8a	Trees total ≥ 5% canopy cover……....	**Sparse Tree**
	8b	Trees total < 5% canopy cover……....	9
9a		Shrubs total ≥ 5% canopy cover……..	**Sparse Shrub**
9b		Shrubs total < 5% canopy cover……..	10
	10a	Herbaceous vascular plants total ≥ 5% canopy cover……..	**Sparse Herb**
	10b	Herbaceous vascular plants total < 5% canopy cover……..	**Sparse Vegetation**

Key to Forest and Woodland Dominance Types and DT Phases

01/30/2011 – S-C NF

Instructions:

1. Preferably, plots or polygons should be keyed out based on overstory canopy cover (trees forming the upper or uppermost canopy layer) by tree species.
2. Plots or polygons lacking such data or lacking an overstory layer should be keyed out using total cover by species.
3. If a plot or polygon does not key out using overstory cover, then it may be keyed using total tree cover.
4. If two trees are equally abundant, the species encountered first in the key is recorded as the most abundant.

			DT or DT Phase Code	Map Unit	Map Group
1a		Black cottonwood is the most abundant tree species……..	**POBAT d.t.**	**RFW**	**R**
1b		Black cottonwood is not the most abundant tree species……	**2**		
	2a	Sitka alder is the most abundant tree/shrub species……	**ALVIS d.t.**	**RFW**	**R**
	2b	Sitka alder is not the most abundant tree/shrub species……..	**3**		
3a		Thinleaf alder is the most abundant tree/shrub species……..	**ALINT d.t.**	**RFW**	**R**
3b		Thinleaf alder is not the most abundant tree/shrub species……	**4**		
	4a	Water birch is the most abundant tree/shrub species……..	**BEOC2 d.t.**	**RFW**	**R**
	4b	Water birch is not the most abundant tree/shrub species……	**5**		
5a		Quaking aspen is the most abundant tree species……..	**6**	**AS**	**R**
5b		Quaking aspen is not the most abundant tree species……	**7**		
	6a	Conifer species total at least 10% absolute canopy cover……..	**POTR5-Conifer d.t.p**	**ASC**	**D**
	6b	Conifer species total less than 10% absolute canopy cover……..	**POTR5-POTR5 d.t.p.**	**AS**	**D**
7a		Whitebark pine is the most abundant tree species……..	**PIAL d.t.**	**WB**	**C**
7b		Whitebark pine is not the most abundant tree species…….	**8**		
	8a	Limber pine is the most abundant tree species……..	**PIFL2 d.t.**	**LM**	**C**
	8b	Limber pine is not the most abundant tree species……..	**9**		
9a		Ponderosa pine is the most abundant tree species…….	**PIPO d.t.**	**PP**	**C**
9b		Ponderosa pine is not the most abundant tree species……..	**10**		
	10a	Lodgepole pine is the most abundant tree species……..	**PICO d.t.**	**LP**	**C**
	10b	Lodgepole pine is not the most abundant tree species……	**11**		
11a		Douglas-fir is the most abundant species AND…….....	**12**		
11b		Douglas-fir is not the most abundant species ……	**15**		
	12a	Ponderosa pine with at least 10% absolute canopy cover……	**PSME-PIPO d.t.p.**	**DFP**	**C**
	12b	Ponderosa pine with less than 10% absolute canopy cover…….	**13**		
13a		Lodgepole pine with at least 10% absolute canopy cover……..	**PSME-PICO d.t.p.**	**DFmix**	**C**
13b		Lodgepole pine with less than 10% absolute canopy cover……	**PSME-PSME d.t.p.**	**DF**	**C**
	14a	Engelmann spruce is the most abundant tree species…….	**PIEN d.t.**	**SF**	**C**
	14b	Engelmann spruce is not the most abundant tree species……..	**15**		

			DT or DT Phase Code	Map Unit	Map Group
15a		Subalpine fir is the most abundant tree species AND……	**16**		
15b		Subalpine fir is not the most abundant tree species ……..	**20**		
	16a	Quaking aspen with at least 10% absolute canopy cover……	**ABLA-POTR5 d.t.p.**	**SF/AS**	**C**
	16b	Quaking aspen with less than 10% absolute canopy cover…….	**17**		
17a		Whitebark pine with at least 10% absolute canopy cover……	**ABLA-PIAL d.t.p.**	**SF/WB**	**C**
17b		Whitebark pine with less than 10% absolute canopy cover…….	**18**		
	18a	Limber pine is the most abundant tree species…….....	**PIFL2 d.t.**	**LM**	**C**
	18b	Limber pine is not the most abundant tree species…….....	**19**		
19a		Douglas-fir with at least 10% absolute canopy cover……..	**ABLA-PSME d.t.p.**	**SF/mix**	**C**
19b		Douglas-fir with less than 10% absolute canopy cover……	**ABLA-ABLA d.t.p.**	**SF**	**C**
	20a	Curlleaf mountain mahogany is the most abundant tree/shrub species……..	**CELE3 d.t.**	**MM**	**W**
	20b	Curlleaf mountain mahogany is not the most abundant Tree/shrub species……	**21**		
21a		Utah juniper is the most abundant tree/shrub species…….	**JUOS d.t.**	**J**	**W**
21b		Utah juniper is not the most abundant tree/shrub species……..	**22**		
	22a	Another or an unknown conifer is the most abundant tree species…	**UNKNOWN**	**UNK**	**C**
	22b	The most abundant tree species is a broadleaf ……..	**23**		
23a		Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables……	**UNKNOWN**	**RFW**	**R**
23b		Stand not located in a riparian setting as described above….	**UNKNOWN**	**UNK**	**D**

DRAFT Key to Shrubland Dominance Types

01/30/2011 – S-C NF

Instructions:

Plots or polygons should be keyed out based on total cover by species. This key is divided into riparian, alpine, and upland sections. First identify the physical setting of the plot, stand, or polygon using the key below.

For the purposes of this key, a riparian setting is defined as an area (typically transitional between aquatic and terrestrial ecosystems) identified by soil characteristics associated with at least seasonally high water tables, distinctive vegetation that requires or tolerates free or unbound water (Manning and Padgett 1995), proximity to a stream or lake, and/or topographic position (e.g. valley bottom). The alpine setting includes the area above the upper limit of continuous forest. Above this limit trees occur only in scattered patches and become increasingly stunted at higher elevations (Arno and Hammerly 1984). In this key the alpine setting takes precedence over the riparian setting. The upland setting includes non-riparian areas below the continuous forest line.

It is likely that some dominance types occur in more than one of these settings. If your plot does not key out successfully in one setting, then try another setting. For example, basin big sagebrush is in the upland key but may occur in degraded riparian areas with downcut streams.

Key to Physical Habitat Setting

Key Leads:

1a		Stand is located in an alpine setting above the upper elevation limit of continuous forest……	**Go to Alpine Key (p.9) (Map unit = ALP)**
1b		Stand is located below the upper elevation limit of continuous forest……	**2**
	2a	Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables……	**Go to Riparian Key (p.10)**
	2b	Stand not located in a riparian setting as described above……	**Go to Upland Key (p.11)**

Key to Alpine Shrubland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 1. Find the name of the most abundant shrub in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more shrub species are equal in abundance, the species listed first in Table 1 is used to assign the dominance type and map unit.
3. If the most abundant shrub species is not listed in Table 1, then record the dominance type as UNKNOWN.

Table 1. Most Abundant Alpine Shrub and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Shrub (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Pinus albicaulis* krummholz	whitebark pine	PIAL-K	**ALPS**	**A**
2	*Picea engelmannii* krummholz	Engelmann spruce	PIEN-K	**ALPS**	**A**
3	*Abies lasiocarpa* krummholz	subalpine fir	ABLA-K	**ALPS**	**A**
4	*Salix glauca*	grayleaf willow	SAGL	**ALPS**	**A**
5	*Salix arctica*	arctic willow	SAAR27	**ALPS**	**A**
6	*Salix nivalis*	snow willow	SANI8	**ALPS**	**A**
7	*Salix planifolia var monica*	Planeleaf willow	SAPLM	**ALPS**	**A**
8	**Species not listed above**		Undefined		**A**

Key to Riparian Shrubland Dominance Types

Instructions:

1. Plots or polygons should be keyed out based on total cover by species.
2. Codes for dominance type and map unit can be found using Table 2a. Find the name of the most abundant shrub in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
3. When two or more shrub species are equal in abundance, the species listed first in Table 2 is used to assign the dominance type and map unit.
4. If the most abundant shrub species is not listed in Table 2a, then record the dominance type as UNKNOWN.

Table 2a. Most Abundant Riparian Shrub and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Shrub (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Alnus viridis ssp. sinuata*	Sitka alder	ALVIS -R	**MBRSH**	**R**
2	*Alnus incana ssp. tenuifolia*	thinleaf alder	ALINT	**MBRSH**	**R**
3	*Betula occidentalis*	water birch	BEOC2	**MBRSH**	**R**
4	*Salix brachycarpa*	shortfruit willow	SABR	**WRSH**	**R**
5	*Salix boothii*	Booth's willow	SABO2	**WRSH**	**R**
6	*Salix drummondiana*	Drummond's willow	SADR	**WRSH**	**R**
7	*Salix monticola*	park willow	SAMO2	**WRSH**	**R**
8	*Salix geyeriana*	Geyer's willow	SAGE2	**WRSH**	**R**
9	*Salix lemmonii*	Lemmon's willow	SALE	**WRSH**	**R**
10	*Salix exigua*	coyote willow	SAEX	**WRSH**	**R**
11	*Salix lutea*	yellow willow	SALU2	**WRSH**	**R**
12	*Salix lucida ssp. lasiandra*	whiplash willow	SALUL	**WRSH**	**R**
13	*Salix lucida ssp. caudata*	greenleaf willow	SALUC	**WRSH**	**R**
14	*Salix bebbiana*	Bebb willow	SABE2	**WRSH**	**R**
15	*Salix wolfii*	Wolf's willow	SAWO	**WRSH**	**R**
16	*Betula glandulosa*	resin birch	BEGL	**WRSH**	**R**
[redacted]	~~*Salix eastwoodiae*~~	~~mountain willow~~	~~SAEA~~	~~**WRSH**~~	~~**R**~~
18	*Salix planifolia*	planeleaf willow	SAPL2	**WRSH**	**R**
19	*Vaccinium uglinosum*	bog blueberry	VAUL	**WRSH**	**R**
20	*Betula pumilis*	bog birch	BEPU4	**WRSH**	**R**
21	*Cornus sericea*	redosier dogwood	COSE16	**MBRSH**	**R**
22	*Rhamnus alnifolia*	alderleaf buckthorn	RHAL	**MBRSH**	**R**
23	*Rhus trilobata*	skunkbrush sumac	RHTR	**MBRSH**	**R**
24	*Rosa* spp.	roses	ROSA5-R	**LRSH**	**R**
25	*Ribes aureum*	golden currant	RIAU	**LRSH**	**R**
26	*Dasiphora fruticosa*	shrubby cinquefoil	DAFR6	**LRSH**	**R**
27	*Artemisia cana*	silver sagebrush	ARCA13	**LRSH**	**R**
28	**Species not listed above**		Undefined		**R**

Key to Upland Shrubland Dominance Types

Instructions:

1. Plots or polygons should be keyed out based on total cover by species.
2. Codes for dominance type and map unit can be found using Table 2b. Find the name of the most abundant shrub in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
3. When two or more shrub species are equal in abundance, the species listed first in Table 2 is used to assign the dominance type and map unit.
4. If the most abundant shrub species is not listed in Table 2b, then record the dominance type as UNKNOWN.

Table 2b. Most Abundant Upland Shrub and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Shrub (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Alnus viridis ssp. sinuata*	Sitka alder	ALVIS-U	**FSH**	**S**
2	*Vaccinium scoparium*	grouse whortleberry	VASC	**FSH**	**S**
3	*Vaccinium membranaceum*	thinleaf huckleberry	VAME	**FSH**	**S**
4	*Physocarpus malvaceus*	mallow ninebark	PHMA5	**FSH**	**S**
5	*Acer glabrum*	Rocky Mountain maple	ACGL	**FSH**	**S**
6	*Rubus parviflorus*	thimbleberry	RUPA	**FSH**	**S**
7	*Sambucus racemosa*	red elderberry	SARA2-F	**FSH**	**S**
8	*Salix scouleriana*	Scouler willow	SASC-F	**FSH**	**S**
9	*Spiraea betulifolia*	White spiraea	SPBE2	**FSH**	**S**
10	*Symphoricarpos albus*	common snowberry	SYAL	**FSH**	**S**
11	*Ribes lacustre*	prickly currant	RILA	**FSH**	**S**
12	*Mahonia repens*	creeping barberry	MARE11	**FSH**	**S**
13	*Juniperus communis*	common juniper	JUCO6	**FSH**	**S**
14	*Ribes viscosissimum*	sticky currant	RIVI3	**FSH**	**S**
15	*Ceanothus velutinus*	snowbrush ceanothus	CEVE	**FSH**	**S**
16	*Arctostaphylos uva-ursi*	kinnikinnick	ARUV	**FSH**	**S**
18	*Amelanchier alnifolia*	Saskatoon serviceberry	AMAL2	**MSH**	**S**
19	*Prunus virginiana*	common chokecherry	PRVI	**MSH**	**S**
20	*Rosa* spp.	roses	ROSA5-U	**MSH**	**S**
21	*Symphoricarpos oreophilus*	mountain snowberry	SYOR2	**MSH**	**S**
22	*Ribes cereum*	wax currant	RICE	**MSH**	**S**
23	*Purshia tridentata*	bitterbrush	PUTR2	**BB**	**S**
24	*Artemisia tridentata ssp. vaseyana*	mountain big sagebrush	ARTRV	**MSB**	**S**
25	*Artemisia tridentata ssp. tridentata*	basin big sagebrush	ARTRT	**BSB**	**S**
26	*Artemisia tripartita ssp.tripartita*	three tip sagebrush	ARTRT2	**TSB**	**S**
27	*Artemisia trid. ssp. wyomingensis*	Wyoming big sagebrush	ARTRW8	**WSB**	**S**
28	*Chrysothamnus viscidiflorus*	yellow rabbitbrush	CHVI8	**SSD**	**S**
29	*Ericameria nauseosa*	rubber rabbitbrush	ERNA10	**SSD**	**S**
30	*Ericameria suffruticosa*	singlehead goldenbush	ERSU13	**SSD**	**S**
31	*Tetradymia canascens*	spineless horsebrush	TECA2	**SSD**	**S**
32	*Artemisia arbuscula* ssp. *thermopola*	cleftleaf sagebrush	ARART	**DSE**	**S**
33	*Artemisia arbuscula* ssp. *longiloba*	early sagebrush	ARARL	**DSE**	**S**
34	*Artemisia arbuscula* ssp. *arbuscula*	low sagebrush	ARARA	**DSE**	**S**
35	*Artemisia nova*	black sagebrush	ARNO4	**DSE**	**S**
36	**Species not listed above**		Undefined		**S**

DRAFT Key to Grassland Dominance Types

01/30/2011 S-C NF

Instructions:

Plots or polygons should be keyed out based on total cover by species. This key is divided into riparian, alpine, and upland sections. First identify the physical setting of the plot, stand, or polygon using the key below.

For the purposes of this key, a riparian setting is defined as an area (typically transitional between aquatic and terrestrial ecosystems) identified by soil characteristics associated with at least seasonally high water tables, distinctive vegetation that requires or tolerates free or unbound water (Manning and Padgett 1995), proximity to a stream or lake, and/or topographic position (e.g. valley bottom). The alpine setting includes the area above the upper limit of continuous forest. Above this limit trees occur only in scattered patches and become increasingly stunted at higher elevations (Arno and Hammerly 1984). In this key the alpine setting takes precedence over the riparian setting. The upland setting includes non-riparian areas below the continuous forest line.

It is likely that some dominance types occur in more than one of these settings. If your plot does not key out successfully in one setting, then try another setting. For example, basin big sagebrush is in the upland key but may occur in degraded riparian areas with downcut streams.

Key to Physical Habitat Setting

Key Leads:

1a Stand is located in an alpine setting above the upper elevation limit of continuous forest…… **Go to Alpine Key (p.13) (Map unit = ALPH)**

1b Stand is located below the upper elevation limit of continuous forest…….. **2**

2a Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables…….. **Go to Riparian Key (p.14)**

2b Stand not located in a riparian setting as described above…….. **Go to Upland Key (p.15)**

Key to Alpine Grassland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 3. Find the name of the most abundant species in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more species are equal in abundance, the species listed first in Table 3 is used to assign the dominance type and map unit.
3. If the most abundant species is not listed in Table 3, then record the dominance type as UNKNOWN.

Table 3. Most Abundant Alpine Graminoid and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Graminoid (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Juncus parryi*	Parry's rush	JUPA	**ALPH**	**A**
2	*Juncus drummondii*	Drummond's rush	JUDR	**ALPH**	**A**
3	*Carex rupestris*	curly sedge	CARU3	**ALPH**	**A**
4	*Carex elynoides*	blackroot sedge	CAEL3	**ALPH**	**A**
5	*Carex scopulorum*	mountain sedge	CASC12	**ALPH**	**A**
6	*Carex aquatilis*	water sedge	CAAQ	**ALPH**	**A**
7	*Carex utriculata*	beaked sedge	CAUT	**ALPH**	**A**
8	*Carex scirpoidea*	northern single spike sedge	CASC10	**ALPH**	**A**
9	*Calamagrostis purpurascens*	purple reedgrass	CAPU	**ALPH**	**A**
10	*Deschampsia cespitosa*	tufted hairgrass	DECE	**ALPH**	**A**
11	*Leucopoa kingii*	spike fescue	LEKI2	**ALPH**	**A**
12	*Festuca brachyphylla*	alpine fescue	FEBR	**ALPH**	**A**
13	*Deschampsia cespitosa*	tufted hairgrass	DECE-A	**ALPH**	**A**
14	*Carex nigricans*	black alpine sedge	CANI2	**ALPH**	**A**
15	*Carex nova*	black sedge	CANO3	**ALPH**	**A**
16	*Phleum alpinum*	alpine timothy	PHAL2	**ALPH**	**A**
17	*Poa reflexa*	nodding bluegrass	PORE	**ALPH**	**A**
18	*Poa cusickii*	Cusick's bluegrass	POCU3	**ALPH**	**A**
19	**Species not listed above**		Undefined		**A**

Key to Riparian Grassland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 4. Find the name of the most abundant graminoid in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more graminoid species are equal in abundance, the species listed first in Table 4 is used to assign the dominance type and map unit.
3. If the most abundant graminoid species is not listed in Table 3, then record the dominance type as UNKNOWN.

Table 4. Most Abundant Riparian Graminoid and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Graminoid (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Schoenoplectus acutus var. acutus*	hardstem bulrush	SCACA	**HA**	**R**
new	*Scirpus microcarpus*	panicled bulrush	SCMI2	**HA**	**R**
9	*Carex livida*	livid sedge	CALI	**HA**	**R**
10	*Carex atherodes*	wheat sedge	CAAT2	**HA**	**R**
12	*Carex aquatilis*	water sedge	CAAQ	**HA**	**R**
7	*Carex lasiocarpa*	woollyfruit sedge	CALA11	**HA**	**R**
11	*Carex buxbaumii*	Buxbaum's sedge	CABU6	**RG**	**R**
13	*Carex utriculata*	NW Territory sedge	CAUT	**RG**	**R**
14	*Carex vesicaria*	blister sedge	CAVE6	**RG**	**R**
16	*Carex nebrascensis*	Nebraska sedge	CANE2	**RG**	**R**
new	Carex aurea	golden sedge	CAAU3	**RG**	**R**
15	*Calamagrostis canadensis*	bluejoint reedgrass	CACA4	**RG**	**R**
3	*Carex scopulorum*	mountain sedge	CASC12	**RG**	**R**
30	*Leymus cinereus*	basin wildrye	LECI4	**RG**	**R**
27	*Juncus arcticus* ssp. *littoralis*	mountain rush	JUARL	**RG ?**	**R**
17	*Carex athrostachya*	slenderbeak sedge	CAAT3	**RG ?**	**R**
22	*Carex praegracilis*	clustered field sedge	CAPR5	**RG ?**	**R**
24	*Phalaris arundinacea*	reed canarygrass	PHAR3	**RG**	**R**
2	*Carex simulata*	analogue sedge	CASI2	**REG**	**R**
4	*Eleocharis palustris*	common spikerush	ELPA3	**REG**	**R**
5	*Eleocharis quinqueflora*	fewflower spikerush	ELQU2	**REG**	**R**
23	*Alopecurus aequalis*	shortawn foxtail	ALAE	**REG**	**R**
18	*Deschampsia cespitosa*	tufted hairgrass	DECE-R	**REG**	**R**
28	*Alopecurus pratensis*	meadow foxtail	ALPR3	**REG**	**R**
20	*Carex microptera*	smallwing sedge	CAMI7	**REG**	**R**
21	*Poa palustris*	fowl bluegrass	POPA2	**REG**	**R**
26	*Agrostis stolonifera*	creeping bentgrass	AGST2	**REG**	**R**
29	*Phleum pratense*	common timothy	PHPR3	**REG**	**R**
25	*Carex douglasii*	Douglas' sedge	CADO2	**REG**	**R**
19	*Danthonia intermedia*	timber oatgrass	DAIN	**REG**	**R**
31	*Poa pratensis*	Kentucky bluegrass	POPR	**REG**	**R**
32	**Species not listed above**		Undefined		**R**

Key to Upland Grassland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 4. Find the name of the most abundant graminoid in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more graminoid species are equal in abundance, the species listed first in Table 4 is used to assign the dominance type and map unit.
3. If the most abundant graminoid species is not listed in Table 5, then record the dominance type as UNKNOWN.

Table 5. Most Abundant Upland Graminoid and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Graminoid (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Calamagrostis rubescens*	pinegrass	CARU	**GRLFO**	**H**
2	*Carex geyeri*	elk sedge	CAGE2	**GRLFO**	**H**
3	*Carex rossii*	Ross' sedge	CARO5	**GRLFO**	**H**
4	*Bromus marginatus*	mountain brome	BRMA4	**GRLFO**	**H**
5	*Carex hoodii*	Hood's sedge	CAHO5	**GRLFO**	**H**
6	*Leucopoa kingii*	spikefescue	LEKI2	**GRLFO**	**H**
7	*Elymus trachycaulus*	slender wheatgrass	ELTR7	**GRLFO**	**H**
8	*Hesperostipa comata*	needle-and-thread	HECO26	**GRLFO**	**H**
9	*Poa secunda*	Sandberg's bluegrass	POSE	**GRLFO**	**H**
10	*Leymus cinereus*	basin wildrye	LECI4	**GRLFO**	**H**
11	*Festuca idahoensis*	Idaho fescue	FEID	**KGS**	**H**
12	*Pseudoroegneria (Agropyron) spicata*	bluebunch wheatgass	PSSP6	**KGS**	**H**
13	*Phleum pretense*	common timothy	PHPR3	**GRD**	**H**
14	*Poa pratensis*	Kentucky bluegrass	POPR	**GRD**	**H**
15	*Bromus inermis*	smooth brome	BRIN2	**GRD**	**H**
16	*Thinopyrum (Agropyron) intermedium*	intermediate wheatgrass	THIN6	**GRD**	**H**
18	*Poa bulbosa*	bulbous bluegrass	POBU	**GRD**	**H**
17	*Bromus tectorum*	cheatgrass	BRTE	**AG**	**H**
19	**Perennial species not listed above**		Undefined	**GRLFO**	**H**
20	**Annual species not listed above**		Undefined	**GRD**	**H**

DRAFT Key to Forbland Dominance Types

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Instructions:

Plots or polygons should be keyed out based on total cover by species. This key is divided into riparian, alpine, and upland sections. First identify the physical setting of the plot, stand, or polygon using the key below.

For the purposes of this key, a riparian setting is defined as an area (typically transitional between aquatic and terrestrial ecosystems) identified by soil characteristics associated with at least seasonally high water tables, distinctive vegetation that requires or tolerates free or unbound water (Manning and Padgett 1995), proximity to a stream or lake, and/or topographic position (e.g. valley bottom). The alpine setting includes the area above the upper limit of continuous forest. Above this limit trees occur only in scattered patches and become increasingly stunted at higher elevations (Arno and Hammerly 1984). In this key the alpine setting takes precedence over the riparian setting. The upland setting includes non-riparian areas below the continuous forest line.

It is likely that some dominance types occur in more than one of these settings. If your plot does not key out successfully in one setting, then try another setting. For example, basin big sagebrush is in the upland key but may occur in degraded riparian areas with downcut streams.

Key to Physical Habitat Setting

Key Leads:

1a		Stand is located in an alpine setting above the upper elevation limit of continuous forest……	**Go to Alpine Key (p.17) (Map unit = ALPH)**
1b		Stand is located below the upper elevation limit of continuous forest……	**2**
	2a	Stand is located in a riparian setting as indicated by proximity to a stream or lake, topographic position, plant species that require or tolerate free or unbound water, and/or soil properties associated with seasonally high water tables……	**Go to Riparian Key (p.17)**
	2b	Stand not located in a riparian setting as described above……	**Go to Upland Key (p.18)**

Key to Alpine Forbland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 6. Find the name of the most abundant forb in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more forb species are equal in abundance, the species listed first in Table 6 is used to assign the dominance type and map unit.
3. If the most abundant forb species is not listed in Table 6, then record the dominance type as UNKNOWN.

Table 6. Most Abundant Alpine Forb and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Forb (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Caltha leptosepala*	white marsh marigold	CALE4	**ALPH**	**A**
2	*Polygonum bistortoides*	Bistort knotweed	POBI6	**ALPH**	**A**
3	*Geum rossii*	Ross' avens	GER)2	**ALPH**	**A**
4	*Trifolium haydenii*	Hayden's clover	TRHA	**ALPH**	**A**
5	*Potentilla diversifolia*	varileaf cinquefoil	PODI2	**ALPH**	**A**
6	*Potentilla ovina*	sheep cinquefoil	POOV2	**ALPH**	**A**
7	*Dryas octopetala*	Eightpetal mountain-avens	DROC	**ALPH**	**A**
8	*Astragalus kentrophyta*	spiny milkvetch	ASKE	**ALPH**	**A**
9	*Arenaria aculeata*	prickly sandwort	ARAC2	**ALPH**	**A**
10	*Phlox pulvinata*	cushion phlox	PHPU5	**ALPH**	**A**
11	*Ivesia gordonii*	Gordon's ivesia	IVGO	**ALPH**	**A**
12	*Polygonum phytolaccifolium*	poke knotweed	POPH	**ALPH**	**A**
13	Solidago multiradiata	Rocky Mountain goldenrod	SOMU	**ALPH**	**A**
14	Tetraneuris grandiflora	graylocks four-nerve daisy	TEGR3	**ALPH**	**A**
15	Minuartia obtusiloba	twinflower sandwort	MIOB2	**ALPH**	**A**
16	Lupinus depressus	depressed lupine	LUDE3	**ALPH**	**A**
17	Zigadenus elegans	mountain deathcamas	ZIEL2	**ALPH**	**A**
18	**Species not listed above**		Undefined	**ALPH**	**A**

Key to Riparian Forbland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 6. Find the name of the most abundant forb in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more forb species are equal in abundance, the species listed first in Table 6 is used to assign the dominance type and map unit.
3. If the most abundant forb species is not listed in Table 7, then record the dominance type as UNKNOWN.

Table 7. Most Abundant Riparian Forb and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Forb (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
1	*Caltha leptosepala*	white marsh marigold	CALE4	**RFO**	**R**
2	*Senecio triangularis*	arrowleaf ragwort	SETR	**RFO**	**R**
3	*Mertensia ciliata*	tall fringed bluebells	MECI3	**RFO**	**R**
4	*Polemonium occidentale*	western polemonium	POOC2	**RFO**	**R**
5	*Equisetum spp except E. arvense*	horsetails	EQUIS	**RFO**	**R**
6	*Solidago canadensis*	Canada goldenrod	SOCA6	**RFO**	**R**
7	**Species not listed above**		Undefined	**RFO**	**R**

Key to Upland Forbland Dominance Types

Instructions:

1. Codes for dominance type and map unit can be found using Table 8. Find the name of the most abundant forb in column 2 and move to column 3 for the dominance type code, column 4 for the map unit code, and column 5 for the map group code.
2. When two or more forb species are equal in abundance, the species listed first in Table 8 is used to assign the dominance type and map unit.
3. If the most abundant forb species is not listed in Table 8, then record the dominance type as UNKNOWN.

Table 8. Most Abundant Upland Forb and Indicated Dominance Type and Map Unit.

(1) Rank	(2) Most Abundant Forb (Dominance Type)		(3) Dom. Type Code	(4) Map Unit Code	(5) Map Group
	Delphinium X occidentale	tall larkspur	DEOC	**TF**	**H**
	Agastache urticifolia	nettleleaf horsemint	AGUR	**TF**	**H**
	Artemisia ludoviciana	Louisiana sagewort	ARLU	**TF**	**H**
	Balsamorhiza macrophylla	cutleaf balsmroot	BAMA4	**TF**	**H**
	Delphinium glaucescens	smooth larkspur	DEGL2	**TF**	**H**
	Balsamorhiza sagittata	arrowleaf balsamroot	BASA3	**TF**	**H**
	Helianthella uniflora	oneflower helianthella	HEUN	**TF**	**H**
	Geranium viscosissimum	sticky geranium	GEVI2	**TF**	**H**
	Valeriana sitchensis	Sitka valerian	VASI	**TF**	**H**
10	*Thalictrum occidentale*	western meadow-rue	THOC	**TF**	**H**
	Chamerion angustifolium	fireweed	CHAN9	**FRD**	**H**
	Illiamna rivularis	streambank wild hollyhock	ILRI	**FRD**	**H**
	Rudbeckia occidentalis	western coneflower	RUOC2	**FRD**	**H**
	Wyethia amplexicaulis	mule-ears	WYAM	**FRD**	**H**
	Wyethia helianthoides	sunflower mule-ears	WYHE2	**FRD**	**H**
	Eurybia (Aster) integrifolia	thickstem aster	EUIN9	**FRD**	**H**
	Pteridium aquilinum	western brackenfern	PTAQ	**FRD**	**H**
	Potentilla glandulosa	sticky cinquefoil	POGL9-U	**GRLFO**	**H**
	Arnica cordifolia	heartleaf arnica	ARCO9	**GRLFO**	**H**
20	*Fragaria virginiana*	Virginia strawberry	FRVI	**GRLFO**	**H**
	Hieracium cynoglossoides	houndstongue hawkweed	HICY	**GRLFO**	**H**
	Lupinus argenteus	silvery lupine	LUAR3	**GRLFO**	**H**
	Lupinus sericeus	silky lupine	LUSE4	**GRLFO**	**H**
	Lupinus arbustus	longspur lupine	LUAR6	**GRLFO**	**H**
	Lupinus wyethii	Wyeth's lupine	LUWY	**GRLFO**	**H**
	Achillea millefolium	western yarrow	ACMI2	**GRLFO**	**H**
	Eriogonum heracleoides	parsnipflower buckwheat	ERHE2	**GRLFO**	**H**
	Erigeron compositus	cutleaf daisy	ERCO4	**GRLFO**	**H**
	Monardella odoratissima	mountain monardella	MOOD	**GRLFO**	**H**
30	*Eriogonum umbellatum*	sulphur-flower buckwheat	ERUM	**GRLFO**	**H**
	Phlox multiflora	flowery phlox	PHMU3	**GRLFO**	**H**
	Phlox hoodii	spiny phlox	PHHO	**GRLFO**	**H**
	Antennaria media	Rocky Mountain pussytoes	ANME2	**GRLFO**	**H**
	Antennaria microphylla	littleleaf pussytoes	ANMI3	**GRLFO**	**H**
	Petrophytum caespitosum	mat rockspirea	PECA12	**GRLFO**	**H**
	Epilobium brachycarpum	tall annual willowweed	EPBR3	**FRD**	**H**
	Sisymbrium altissimum	tall tumblemustard	SIAL2	**FRD**	**H**
	Gayophytum diffusum	spreading groundsmoke	GADI2	**FRD**	**H**
	Polygonum douglasii	Douglas' knotweed	PODO4	**FRD**	**H**
40	*Madia glomerata*	mountain tarweed	MAGL2	**FRD**	**H**
	Euphobia esula	leafy spurge	EUES	NW	**H**
	Centaurea stoebe	spotted knapweed	CEST8	NW	**H**
	Cirsium arvense	Canada thistle	CIAR4	NW	**H**

	Linaria dalmatica	dalmatian toadflax	LIDA	NW	**H**
	Linaria vulgaris	butter and eggs	LIVU2	NW	**H**
	Chondrilla juncea	rush skeletonweed	CHJU	NW	**H**
	Cardaria draba	whitetop	CADR	NW	**H**
48	**Species not listed above**		Undefined		**H**

Key to Non-Vegetated Land Cover and Land Use Types

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	Map Group
1a. Area is currently used for agricultural activity (e.g. a fallow field). . . . . **Agriculture (AGR)**	**N**
1b. Area is not currently used for agricultural activity 2	
2a. Area is currently developed for urban, residential, administrative use . . . . . **Developed (DEV)**	**N**
2b. Area is not currently developed for urban, residential, administrative use 3	
3a. Area is dominated by open water or a confined water coarse . . . . . **Water (WA)**	**N**
3b. Area is not dominated by open water or a confined water coarse 4	
4a. Area is dominated by unburned barren land (e.g. bare ground, bedbrock, scree/tallus, mines/talings) . . . . . **Barren/Rock (BR)**	**N**
4b. Area is not dominated by unburned barren land 5	
5a. Area is recently burned with little or no live vegetation; standing dead trees present. . . . . **Standing Dead Tree (SBT)**	**B**
5b. Area not as above. . . . . **Unclassified**	

Appendix A. Absolute and Relative Cover

Absolute cover of a plant species is the proportion of a plot's area included in the perpendicular downward projection of the species. These are the values recorded when sampling a vegetation plot. Relative cover of a species is the proportion it comprises of the total plant cover on the plot (or the proportion of a layer's cover). Relative cover values must be calculated from absolute cover values. For example, we estimate overstory canopy cover on a plot as follows: lodgepole pine 42%, Engelmann spruce 21%, and subalpine fir 7%. These values are the absolute cover of each species. The relative cover of each species is calculated by dividing each absolute cover value by their total (70%) as follows:

	Absolute Cover	Calculation	Relative Cover
Lodgepole pine	42%	100 x 42 / 70 =	60%
Engelmann spruce	21%	100 x 21 /70 =	30%
Subalpine fir	7%	100 x 7 /70 =	10%
Total of values	70%		100%

We calculate relative cover of 60% for lodgepole pine. This means that lodgepole pine makes up 60% of the overstory tree canopy cover on the plot. Relative cover always adds up to 100%, but absolute cover does not. Because plant canopies can overlap each other, absolute cover values can add up to more than 100%. In our example, the total of the absolute cover values is 70, but this does not mean that overstory trees cover 70% of the plot. Overstory tree cover would be 70% if there were no overlap between the crowns of the three species, but only 42% with maximum overlap. The actual overstory cover must be determined when sampling the plot if the information is desired, but the sum of the species cover values is used to calculate relative cover.

If the absolute cover values in our example were all halved or all doubled, the relative cover of each species would not change even though overstory tree cover would be very different. Halving the absolute values would mean overstory cover would be between 21 and 35%, depending on the amount of overlap. Doubling the values would mean overstory cover could range from 84 to 100% (not 140%). Each of these scenarios would be very different from the original example in terms of wildlife habitat value, fuel conditions, fire behavior, and silvicultural options; but the relative cover of the tree species would be exactly the same. We should also note that they also could vary widely in spectral signature. The key point here is that relative cover values by themselves provide limited ecological information and may be of little value to resource managers. Relative cover can be derived from absolute cover, but absolute cover can not be derived from relative cover values. This is why absolute cover is recorded in the field.

Appendix B. Map Group and Map Unit Codes

Map Group	Code
Conifer Forest	**C**
Deciduous Forest	**D**
Shrubland	**S**
Herbaceous	**H**
Riparian	**R**
Alpine	**A**
Sparse Vegetation	**V**
Burned Area	**B**
Non-Vegetated	**N**
Woodland	**W**

Vegetation Map Unit	Code
Alpine	
Alpine	**ALPR**
Alpine non-riparian	**ALPN**
Riparian	
Herbaceous Aquatic/Flooded Wet Meadows	**HA**
Please note: we should consider splitting HA into RG or REG. This is not thinking about the vegetation or site spectral image, but oriented towards the ecological indications of species.	
Low Riparian Shrublands	**LRSH**
Mixed Broadleaf Riparian Shrublands	**MBRSH**
Willow Riparian Shrublands	**WRSH**
Riparian Grasslands	**RG**
Riparian Early Grasslands	**REG**
Riparian Forblands	**RFO**
Herbaceous	
Grasslands -Ruderal	**GRD**
Annual Grassland	**AG**
Key Grassland Species	**KGS**
Tall Forblands	**TF**
Forblands – Ruderal	**FRD**
Upland Grasslands and Low Forblands	**GRLFO**
Noxious Weeds (listed in the State of Idaho)	**NW**
Herbaceous/Conifer does not show up in key	**HC**
Shrubland	
Low Sagebrush Dwarf Shrublands	**DSE**
Sagebrush Dry Shrublands	**SSD**
Mountain Big Sagebrush	**MSB**
Three Tip Sagebrush	**TSB**
Wyoming Big Sagebrush	**WSB**
Basin Big Sagebrush	**BSB**
Bitterbrush	**BB**
Upland Forest Shrublands	**FSH**
Mountain Shrublands	**MSH**
Shrub/Conifer – does not show up in key	**SC**

Forest and Woodland	
Aspen	**AS**
Aspen/Conifer	**ASC**
Douglas-fir	**DF**
Douglas-fir Mix	**DFmix**
Douglas-fir/Ponderosa Pine	**DFP**
Juniper	**J**
Limber Pine	**LM**
Lodgepole Pine	**LP**
Mahogany	**MM**
Ponderosa Pine	**PP**
Riparian Forest Woodland	**RFW**
Spruce/Fir	**SF**
Spruce/Fir/Aspen	**SF/AS**
Spruce/Fir/Whitebark	**SF/WB**
Whitebark Pine	**WB**
Other	
Standing Dead Trees	**SDT**
Agriculture	**AGR**
Developed	**DEV**
Barren/Rock	**BR**
Water	**WA**
Unknown	**UNK**